MASHANTUCKET PEQUOT TRIBAL NATION
Department of Planning & Community Development

STANDARD PROCEDURES FOR THE PREPARATION OF PRELIMINARY & DESIGN DRAWINGS AND SUBMISSION OF RECORD DRAWINGS

April 24, 2006

Mashantucket Pequot Tribal Nation

STANDARD DRAWING PROCEDURES

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STANDARD DRAWING PROCEDURES

I. Introduction

The Mashantucket Pequot Tribe has prepared the following procedures for Vendors when performing Field Surveys and submitting Preliminary, Design, Record and As-built Drawings.
Questions regarding these procedures shall be directed to the Mashantucket Pequot Tribe Planning Department, telephone number 312-2510, please reference Standard Drawing Procedures.

II. Field Survey Requirements

1) Horizontal surveys shall comply with the minimum standards for an A-2 survey as stated in the MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT adopted 9/26/96, unless otherwise directed by the Mashantucket Pequot Tribal Nation.

2) Vertical surveys shall comply with the minimum standards for a V-2 survey as stated in the MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT adopted 9/26/96, unless otherwise directed by the Mashantucket Pequot Tribal Nation. Vertical Surveys shall be based upon NGVD 29, unless otherwise directed by the Mashantucket Tribal Nation.

3) Topographic surveys shall comply with the minimum standards for a T-2 survey as stated in the MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT, adopted 9/26/96, unless otherwise directed but the Mashantucket Pequot Tribal Nation.

III. Field Survey Classes of Accuracy Sec. 20-300b-11

(a) All surveys prepared in metric format shall use: 1 meter = 3.28083333 U.S. Survey feet.

(b) Horizontal Accuracy

Each survey depicting horizontal locations shall conform to a Horizontal Accuracy Class the tolerance of which is defined as follows:

Class	**Positional**	**Linear**			**Angular**
		Feet	**Meters**	**(Use ratio for D>...)**	
AA	1: 15,000	± 001'	± .003m	[1:22,500@D>225'(69m)]	± 8"
A-1	1: 10,000	± 0.01'	± .003m	[1:15,000@D>150'(46m)]	± 10"
A-2	1: 5,000	± 0.02'	± .006m	[1:7,500@D>150'(46m)]	± 20"
B	1: 1,000	± 0.5'	± .15m	[1:1,500@D>750'(229m)]	± 2'
C	± 2'	± 2'	± .6m		± 30'
D	compilation of existing data-NOT A FIELD SURVEY				

Linear accuracy's expressed as "±" apply to distances less than (<) those prescribed as a ratio.

(c) Vertical Accuracy

Each survey depicting vertical location shall conform to a Vertical Accuracy Class the tolerance of which is defined as follows:

	Level Loop Closure Greater Than One Mile		**Level Loop Closure Less Less Than Mile**	
Class	**Feet**	**Meters**	**Feet**	**Meters**
V-1	± .02√M	± .005√K	± .006√N	± .002√N
V-2	± .035√M	± .008√K	± .010√N	± .003√N
V-3	± .05√M	± .012√K	± .020√N	± .006√N

M or K = The length of the level loop in miles/kilometers

N = The number of instrument setups in the level loop

Each Topographic Survey shall conform to a Topographic Accuracy Class the tolerance of which is defined as follows:

Class	Horizontal Position		Contour Interval Test
	Feet	Meters	
T-1	1/40 of map scale	1/1500 of map scale	90% within ½ contour interval
T-2	1/40 of map scale	1/1500 of map scale	80% within ½ contour interval

Classes T-1 and T-2 are to be used for ground survey procedures.

T-3 This class of topographic map applies to photogrammetric maps for which the surveyor provides the horizontal and vertical control. Refer to the "National Map Standards for Photogrammetric Mapping" for requirements.

T-D This class of map standard applies to a topographic map complied from various sources of information not necessarily verified by the surveyor.

In using Topographic Accuracy Class T-1 or T-2, the surveyor is expressing confidence that should a test profile be run in the field, a plotted comparison with a profile scaled from the map shall be in agreement within the above criteria and the remainder shall be within the contour interval.

IV. Data Processing

1) Information in drawings and on maps and plans shall include, but not be limited to:

A. Site Work:

a) Utility locations - water with pipe size & material, sewer with pipe size & material, light poles, utility poles, manholes, handholes, valves, vaults, hydrants, and catch basins with type.
b) Drainage including pipe sizes, invert elevations, top of frame elevations, flow arrows, flared ends with inverts, headwalls with inverts, culverts with inverts, pipe size and type.
c) Site related building locations shall include, top of foundation, column lines, and stairs/ entrances, and other features as directed by the Mashantucket Pequot Tribal Nation.
d) Gutterline, top of curb, type of curb, centerline, sidewalks, parking lots (with striping), islands, signs, guard rails, and significant trees/shrubs (12" Dia.).
e) Traverse points with coordinates and descriptions, and bench marks with elevations and descriptions.
f) 2 foot contours (minimum)
g) Elevations for underground utilities shall be shown for all valves, hydrants, vaults, manholes, laterals and grade changes. For long segments of constant grade, elevations should be shown a minimum of every 100 feet.
h) All ASCII points or hard shots shall be included in the drawing.
i) Coordinates and datum elevations shall be based on NAD 83.

All information to conform to the standards contained in this document.

B. Construction:

a) Utility locations – all mechanical and electrical including fire protection, security and surveillance.
b) Architectural components.
c) Structural components.
d) Footings and foundations.

All information to conform to the standards contained in this document.

V. Submission of Preliminary and Design Drawings

Preliminary and design drawings are the responsibility of the contractor/engineer or architect to provide. These drawings will be plotted by the Planning Department on an emergency basis only. In an emergency, the contractor/engineer/architect shall include a plot style table for pen setups. This is the **only** time drawings can be submitted to the Tribe without following Tribal Standards. These early submissions shall not be a common occurrence; files should only be submitted for plotting under emergency circumstances. The contractor shall follow normal procedures for submitting plans and electronic drawings otherwise.

VI. Record Drawing Digital Format Procedures

Record drawings received in digital format shall adhere to the following standards.

1) All layering shall conform to section VIII. Layers or Items used that are not listed in our standard, can be created using our standard layers as a guide. Items not included in final product because no layer was listed is unacceptable.

2) Drawing files shall not be rotated or translated so that the drawing coordinates differ from the field coordinates.

3) When practical, all lines shall be drafted as continuous polylines.

4) Drawings submitted shall abide by Connecticut State Statutes for Asbuilts.

VII. Xreferenced Drawings

Any xreferences shall stay in original drawings, but a copy of each one shall be on submitted on the CD in a directory called “Xrefs”. This is to insure no information is lost during merging of files. Contractor shall also provide list of xrefs for drawings with descriptions of xreferences.

VIII. Standard Layers and File Names Required for AutoCAD Drawings

1. The following pages are the standard layers required when submitting CAD drawings of site work and asbuilt surveys. If needed, the Vendor may create a custom layer if there is not one already created for the item. When creating custom layers, the Vendor shall follow the format of standard layers.

2. If the vendor has added information to a base drawing received from the Tribe, the process for standard layers shall be to add the prefix asb to the layers. The addition of the prefix asb to the layer will assist in determining what work was done by the vendor for the CAD files.

4. Upon request, the Planning Department shall give the vendor a diskette with CAD script files. These script files contain all the layers listed below, and can be dragged or dropped into a CAD drawing which will load the required layers instantly. Requests for this information should be directed to the Project Manager.

A. Standard layers for exterior of building, site work etc.

LAYER NAME	COLOR	DESCRIPTION
0	7	AutoCAD standard layer
BOUNDARIES		
Asc_boundary	130	Field shots
Boundary	130	Boundary Lines
Boundary_easement	130	Easements
Boundary_misc	2	Pins, Drill Holes, Monuments, etc
Boundary_project	130	Project Boundaries
Boundary_settlement	192	Settlement Boundary
Boundary_text	2	Boundary Text
Boundary_townlines	210	Town lines
Boundary_row	130	Right of Ways
Boundary_zoning	12	Zoning
BUILDINGS		
Asc_bldg	6	Field shots
Bldg	6	Buildings
Bldg_asbuilted	6	Asbuilt Buildings
Bldg_column	253	Column Lines
Bldg_h2otank	6	Water tank
Bldg_misc	2	Misc. items
Bldg_text	2	Text
Bldg_trailer	6	Trailers
DETAILS		
Detail	7	Detail lines
Detail_hatch	254	Hatching for details
Detail_text	20	Text for details
DIMENSIONING		
Dim_lines	20	Arrows, lines, etc.(no leaders)
Dim_text	20	Dimension text
LANDSCAPING		
Plani_brushl	110	Brush
Plani_groundcover	2	Ground covers
Plani_landscaping	2	Landscaping beds
Plani_tree	110	Single trees
Plani_treel	110	Treeline
Plani_vegetation	110	Vegetation
PLANIMETRICS		
Asc_plani	2	Various shots
Asc_tree	2	Field shots of trees
Plani_arch_limit	200	Archaeological limits
Plani_Ballfield	2	Ballfield
Plani_benches	2	Benches
Plani_borings	2	Test pits, borings
Plani_bridge	4	Bridges
Plani_bulkhead	2	Bulkheads for buildings
Plani_cl	95	Centerline of road
Plani_cl_station	2	Centerline of road stationing

LAYER NAME	COLOR	DESCRIPTION
Plani_conc	253	Concrete slabs, footings etc.
Plani_conc_ab	253	Concrete slabs, footings etc. ,asbuilts
Plani_courts	2	Tennis, basketball courts
Plani_curb	11	Curbing
Plani_deck	2	Decks
Plani_digi_roads	11	Digitized Roads
Plani_dpark	34	Gravel Parking
Plani_drive	21	Driveways
Plani_droad	34	Gravel Roads
Plani_erosion	2	Erosion control
Plani_fence	2	Fences
Plani_fpole	2	Flagpoles
Plani_grail	12	Guard Rails
Plani_hatch	2	Hatching
Plani_misc	2	Misc, signs, benches, etc.
Plani_mbox	2	mail boxes
Plani_monorail_footing	2	Monorail Footings
Plani_pavemarking	211	Pavement markings
Plani_parking	11	Paved parking
Plani_Playground	2	Playgrounds
Plani_pool	2	Pools & spas
Plani_post	2	Posts
Plani_ramp	2	Ramps
Plani_retwall	4	Retaining walls
Plani_retwall_footing	2	Retaining wall footings
Plani_road	11	Roads
Plani_roads_asbuilts	11	Road asbuilts
Plani_rocks	2	Rocks
Plani_sidewalk	31	Sidewalks
Plani_steps	2	Steps
Plani_stwall	65	Stone walls
Plani_text	2	Text
Plani_trail	51	Trails
PROPOSED		
Proposed	1	Proposed features/objects
Proposed_grading	1	Proposed Grading
Proposed_notes	1	Proposed Notes
Proposed_text	1	Proposed Text (leaders)
Proposed_utilities	1	Proposed utilities
SURVEY		
Asc_survey	230	Boundary, etc
Asc_survey_ctrl	230	Control
Asc_survey_stakeout	230	Stakeout
Survey_control	230	Control
Survey_info	2	Survey info, bearings, distances
Survey_misc	2	Pins, Drill Holes, Monuments, etc
Survey_notes	40	Notes for map
TITLE		
Title	153	Title and text
Title_misc	153	Legends, notes, etc.
Title_nscale	153	North arrow and scale
TOPOGRAPHY		
Topo_Cont_hgh	22	Index Contours
Topo_Cont_hgh_field	22	Field generated Contours

LAYER NAME	COLOR	DESCRIPTION
Topo_Cont_nml	252	Intermediate Contours
Topo_Cont_nml_field	252	Field generated Contours
Topo_Cont_text	2	Contour Text
Topo_spot_elev	2	Spot elevations
UTILITIES		
Communications		
Asc_com	30	Field shots of com.
asc_com_spare	30	Spare conduit
asc_conduit_rte2	30	Rte 2 Conduit
u_com_abandoned	30	Abandoned in place lines
U_com_cable	30	Cable
U_com_cable_tv	30	Cable TV
U_com_camera_ab	30	Surveillance cameras
U_com_fiber_optic	30	Fiber Optic Lines
U_com_fire_alarm	30	Fire Alarm lines
U_com_hh	30	Communication hand hole
U_com_line	30	Communication line
U_com_mh	30	Communication manhole
U_com_security	30	Security Lines
U_com_structure	30	structures
U_com_telephone	30	Telephone lines, etc
U_com_text	30	Communication text
Electric		
asc_elec	10	Field shots of electric
U_elec_abandoned	10	Abandoned in Place lines
U_elec_box	10	Electric box
U_elec_com_combined	10	Electric and Communication Combined
U_elec_ductbank	10	Ductbank
U_elec_gen_ducts	10	Ducts for generator
U_elec_gen_pads	10	Pads for generator
U_elec_hh	10	Electric hand hole
U_elec_light_exterior	10	Exterior Lighting (not Lightpoles)
U_elec_line	10	Electric lines
U_elec_line_approx	10	Approximate location of electric lines
U_elec_line_overhead	10	Overhead electric Lines
U_elec_loop_ab	10	Loops for guard shacks
U_elec_lp	10	Light poles
U_elec_meter	10	Electric meter
U_elec_mh	10	Electric manhole
U_elec_misc	10	Misc. lighting
U_elec_pole	10	Electric poles
U_elec_removed	10	Electric lines removed
U_elec_sleeve	10	Electric Sleeves
U_elec_structure	10	structures
U_elec_text	10	Electric text
U_elec_vault	10	Electric Vault
Gas		
asc_gas	50	Field shots of gas
u_gas_.5in	50	½ inch gas line
U_gas_.75in	50	¾ inch gas line
U_gas_1.25in	50	1.25 inch gas line
U_gas_1.5in	50	1.5 inch gas line
U_gas_10in	50	10 inch gas line
U_gas_12in	50	12 inch gas line

LAYER NAME	COLOR	DESCRIPTION
U_gas_1in	50	1 inch gas line
U_gas_2in	50	2 inch gas line
U_gas_3in	50	3 inch gas line
U_gas_4in	50	4 inch gas line
U_gas_5in	50	5 inch gas line
U_gas_6in	50	6 inch gas line
U_gas_8in	50	8 inch gas line
U_gas_off	50	Gas lines abandoned
U_gas_structure	50	structures
U_gas_text	50	Gas text
U_gas_valve	50	Gas valves
Sanitary		
asc_sanit	80	Field shots of sanitary
asc_sanit_approx	80	Field shots of sanitary (approx)
U_san_2in	80	2 inch Sanitary
U_san_3in	80	3 inch Sanitary
U_san_4in	80	4 inch Sanitary
U_san_6in	80	6 inch Sanitary
U_san_8in	80	8 inch Sanitary
U_san_10in	80	10 inch Sanitary
U_san_12in	80	12 inch Sanitary
U_san_14in	80	14 inch Sanitary
U_san_15in	80	15 inch Sanitary
U_san_16in	80	16 inch Sanitary
U_san_18in	80	18 inch Sanitary
U_san_20in	80	20 inch Sanitary
U_san_24in	80	24 inch Sanitary
U_san_30in	80	30 inch Sanitary
U_sanitary_approx	80	Sanitary approximate
U_san_fm	80	Force Main
U_san_fm_1.25	80	1.25in Force Main
U_san_fm_2.5in	80	2.5in Force Main
U_san_fm_1in	80	1in Force Main
U_san_fm_2in	80	2in Force Main
U_san_fm_3in	80	3in Force Main
U_san_fm_4in	80	4in Force Main
U_san_fm_6in	80	6in Force Main
U_san_fm_8in	80	8in Force Main
U_sanitary_grease	80	Sanitary grease traps
U_sanitary_mh	80	Sanitary manholes
U_san_pipe_text	80	Sanitary Pipe Text Size
U_sanitary_pumps	80	Pump stations, grinders
U_sanitary_septic_field	80	Septic fields
U_sanitary_structure	80	structures
U_sanitary_text	80	Sanitary text
Storm		
asc_storm	80	Field shots of storm
U_storm_2in	80	2 in Stormwater
U_Storm_3in	80	3 in Stormwater
U_Storm_4in	80	4 in Stormwater
U_Storm_6in	80	6 in Stormwater
U_Storm_8in	80	8 in Stormwater
U_Storm_12in	80	12 in Stormwater
U_Storm_15in	80	15 in Stormwater

LAYER NAME	COLOR	DESCRIPTION
U_Storm_21in	80	21 in Stormwater
U_Storm_24in	80	24 in Stormwater
U_Storm_30in	80	30 in Stormwater
U_Storm_36in	80	36 in Stormwater
U_Storm_42in	80	42 in Stormwater
U_Storm_48in	80	48 in Stormwater
U_Storm_54in	80	54 in Stormwater
U_storm_cb	80	Catch basins
U_storm_culvert	80	Culverts
U_storm_footdrains	81	Footing drains
U_storm_mh	80	Drainage manholes
U_storm_roofdrains_4in	80	4 in Roof Drains
U_storm_roofdrains_6in	80	6 in Roof Drains
U_storm_roofdrains_8in	80	8 in Roof Drains
U_storm_roofdrains_10in	80	10 in Roof Drains
U_storm_roofdrains_12in	80	12 in Roof Drains
U_storm_oil_h2o_sedchamber	80	Sedchambers
U_storm_riprap	80	Rip rap
U_storm_structure	80	structures
U_storm_text	80	Storm water text
Water		
asc_water	160	Field shots of water
U_water_firehyd	160	Fire hydrant
U_water_h2otank	160	Water tank
U_water_irrigation	160	Irrigation
U_water_.5in	160	½ in Water lines
U_water_.75in	160	¾ in Water lines
U_water_1in	160	1 in Water lines
U_water_2in	160	2 in Water lines
U_water_3in	160	3 in Water lines
U_water_4in	160	4 in Water lines
U_water_6in	160	6 in Water lines
U_water_8in	160	8 in Water lines
U_water_10in	160	10 in Water lines
U_water_12in	160	12 in Water lines
U_water_16in	160	16 in Water lines
U_water_20in	160	20 in Water lines
U_water_structure	160	structures
U_water_text	160	Water text
U_water_valve	160	Water valves
U_water_wells	160	Water wells
Wetlands		
Asc_wet	140	Field shots of wetlands
Wetland_buffer	200	Wetland buffer
Wetland_field	140	Field located wetlands
Wetland_fill	143	Filled wetland
Wetland_statebd	140	State boundary
Wetland_streams	142	Streams
Wetland_sym	2	Hatching
Wetland_text	2	Flags, text, etc.
Wetland_waterbodies	5	Lakes, ponds, etc

B. Standard layers for buildings and interiors.

1. Please call Foxwoods Casino Engineering for their standards, 312-2215

IX. Submittal of Record Drawings

The procedure for submittal shall be:

a. Hard Copies of Construction as-builts or Field Surveys completed.
b. Electronic Files, on CD-ROM. Files shall be AutoCAD Release 2000 or newer.
c. Electronic Files shall conform to the specifications listed herein.

Once Record Drawings are complete, the Project Manager shall review hard copies or electronic files to confirm information. When this is complete the Project Manager shall give the Vendor's information to the MPTN Planning Department.

X. Refusal of Record Drawings

Drawings & Electronic Files that do not follow the standards listed herein may be refused until they conform to standards.

XI. Survey Control

The Mashantucket Pequot Tribal Nation Planning Dept. has its own Survey Control and will provide this information to vendor upon reward of contract.

XII. Revisions

Submitted drawings shall contain a revision date and brief description of the revision on each revised sheet. Revisions shall be clearly identified using a revision cloud and revision number. In addition, the cover sheet shall show the latest applicable revision date.

END OF DOCUMENT